Technology Applications Work Group A Recommendations

Work Group A met in July 2021 to develop recommendations for the review and revision of the technology applications Texas Essential Knowledge and Skills (TEKS). In recognition of the opportunities and threats presented by our ever-increasing digital world and to be compliant with current legislation, Work Group A suggests the following recommendations for revising the TEKS. The table below outlines the focus areas, recommendations, and rationales developed from the technology applications TEKS survey, content advisor consensus recommendations, and Work Group A.

Focus Area	Recommendations	Rationale
Introduction to the TEKS	The introduction to the technology applications TEKS should incorporate language that allows teachers the flexibility to incorporate new and emerging technology without being too specific to existing devices and technology. Content advisors recommended including language in the introduction regarding districts' flexibility in offering technology applications as an integrated or stand-alone course. Work Group A did not come to consensus regarding this recommendation. There were multiple viewpoints regarding this issue. One viewpoint is to not include sentences that recommend flexibility of offering technology applications integrated within all content areas in the introduction. The members who held this viewpoint expressed concern that if districts are encouraged to be flexible, they will not employ technology applications teachers. A second viewpoint is to include the language recommended by the content advisors because some district may not have the resources to offer standalone technology applications classes. Finally, a third viewpoint is to incorporate language that encourages districts to have a standalone class/course. TEC §28.002(c-3), which outlines requirements for the technology applications essential knowledge and skills, should be addressed in the introduction.	Technology evolves at a rapid pace. This recommendation allows teachers the flexibility to include new technologies into instruction, while not limiting certain devices. Work Group A would prefer that technology applications TEKS be taught by a technology applications early childhood–grade 12 certified teacher as a separate stand-alone course of instruction, similar to how physical education and fine arts are commonly offered in kindergarten–grade 5. Technology applications TEKS integration into content instruction is a challenge and does not always occur.

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Conceptual framework	Align to Computer Science Teachers Association (CSTA) and International Society for Technology in Education (ISTE) standards. Use the CSTA concepts and sub-concepts as a guide to formulate new technology applications strands for the technology applications TEKS. Starting from CSTA standards, re-align/revise/remove existing technology applications TEKS to fit into new strands where applicable to ensure concepts required by TEC §28.002(c-3) are incorporated: coding, computer programming, computational thinking, and cybersecurity. Additionally, revise the technology applications TEKS using the ISTE Standards for Students as a lens to ensure all important concepts have been incorporated.	CSTA and ISTE have national standards that have been widely accepted by other states. These standards align with college and career readiness.
Structure/organization	Separate current grade bands (K-grade 2, grades 3-5) into individual grade levels. Work Group A supports the content advisors' recommendation to include strand names at the beginning of each technology applications knowledge and skills statement.	This separation will allow for content scaffolding and increased rigor. This will establish accountability for the technology applications TEKS to be taught at each grade level. It will also allow for developmentally appropriate skill development. Using strand names allows for more effective vertical alignment and reinforces the framework.

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Creation of new/revision of current standards	The current TEKS should be realigned to the proposed new strands. New standards should be created, where appropriate, to include: • Emerging technologies • Learning tool/process • Critical thinking • Innovative process and iterative design process • Communication and collaboration • Inventions and modeling—hands on design • STEM/maker space/robotics (applications)	There are gaps in the current TEKS, and House Bill (HB) 2984, 86th Texas Legislature, 2019, added TEC §28.002(c-3) requiring necessary skills that must be included in the kindergarten-grade 8 TEKS for technology applications. In addition, these changes will prepare students for college and career readiness. Looking at the standards through the ISTE lens will help provide an internationally recognized conceptual framework through which to develop these standards. The current TEKS are based on ISTE framework; however, the recommendation is to incorporate computer science concepts. Based on the survey and content advisor recommendations, the TEKS should be realigned to new strands and these concepts should be either added or maintained.
Digital literacy and computer science	When revising the technology applications TEKS, be sure to include the following: • Concepts regarding using technology as a consumer and concepts about understanding technology as a creator • Computer science/coding/computational thinking/cybersecurity • Technology operations/foundational skills (including keyboarding skills) • Information fluency (synthesis and analysis of information) and research/study skills	These concepts and skills are foundational to successfully navigating our increasingly technological world and to being successful in college and careers, and some of them are missing from the current technology applications TEKS.

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Vertical alignment	Use CSTA progression chart to guide vertical alignment. Vertically align the technology applications TEKS from kindergarten through grade 8 to support high school courses.	The CSTA progression chart serves as a good frame of reference to ensure vertical alignment and that technology skills are developmentally appropriate by grade level. It also allows for preparation for and alignment with the high school courses.
Digital citizenship/leadership	Review the health education standards regarding digital citizenship to ensure consistency and to reinforce important concepts. Digital citizenship/leadership should be its own strand. The student expectations should include the following concepts: • Acceptable use • Responsible and fair use • Ethical behavior • Media balance and well being • Privacy and security (including passwords and safe spaces) • Intellectual property • Digital footprint and identity • Relationships and communication • Cyberbullying, digital drama (as defined by Common Sense Media), and hate speech • News and media literacy Ensure compliance with TEC §28.002(z), requirements regarding teaching of digital citizenship and cyberbullying.	These concepts should be included so that students are taught how to be safe in a digital environment and to be responsible consumers of digital media and social platforms. Risk and threats have increased; there is a heightened importance in teaching students how to respect and protect themselves and others online.

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Process for TEKS review	Work Group A recommends the following process for revising the technology applications TEKS: 1. Use the CSTA concepts and subconcepts as a guide to formulate new technology applications TEKS strands. 2. Starting from CSTA standards, re-align/revise/remove existing technology applications TEKS to fit into new strands, where applicable, to ensure concepts required by TEC §28.002(c-3) are incorporated: coding, computer programming, computational thinking, and cybersecurity. Revise the technology applications TEKS by reviewing them through an ISTE Standards for Students lens to ensure all important concepts are included. 3. Determine learning outcomes for each grade. Separate grade bands into grades under the new strands. 4. Maintain digital citizenship as a separate strand. 5. Ensure compliance with TEC §28.002(z), digital citizenship and cyberbullying. 6. Ensure vertical alignment using the following: • CSTA progression chart; and • TEKS for computer science and other related high school courses. 7. Address survey concerns and successfully implement the new technology applications TEKS by developing supports, content integrations, and TEKS Guide.	These steps will facilitate a logical development of the TEKS.